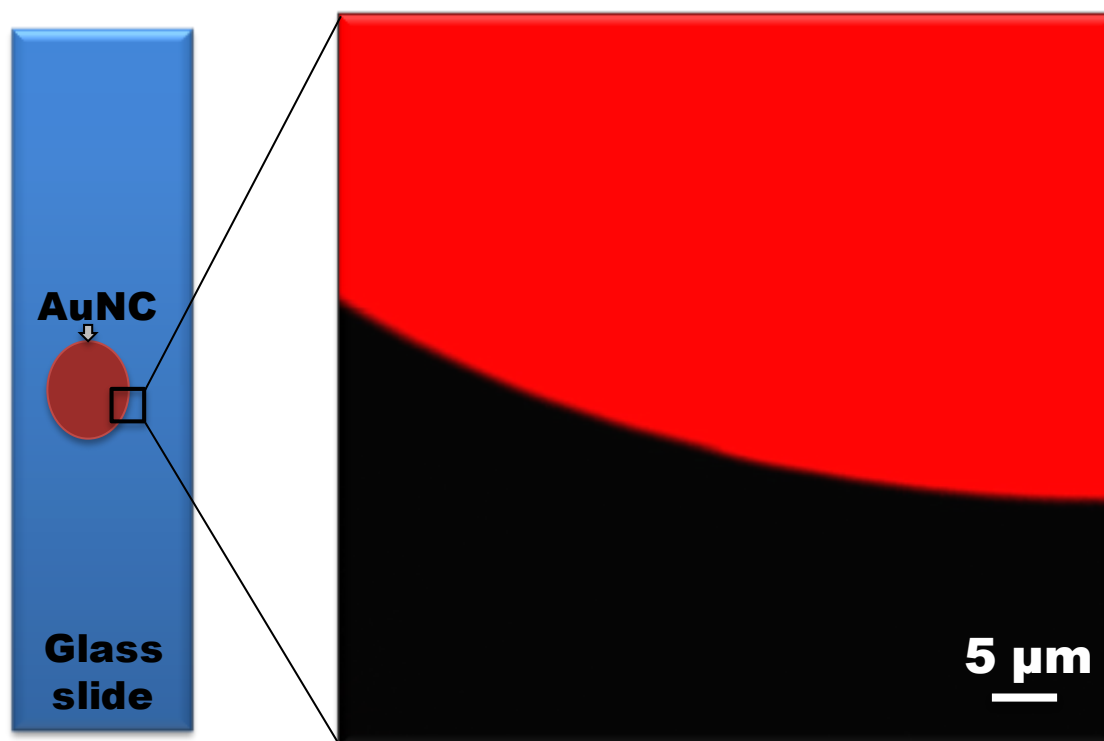


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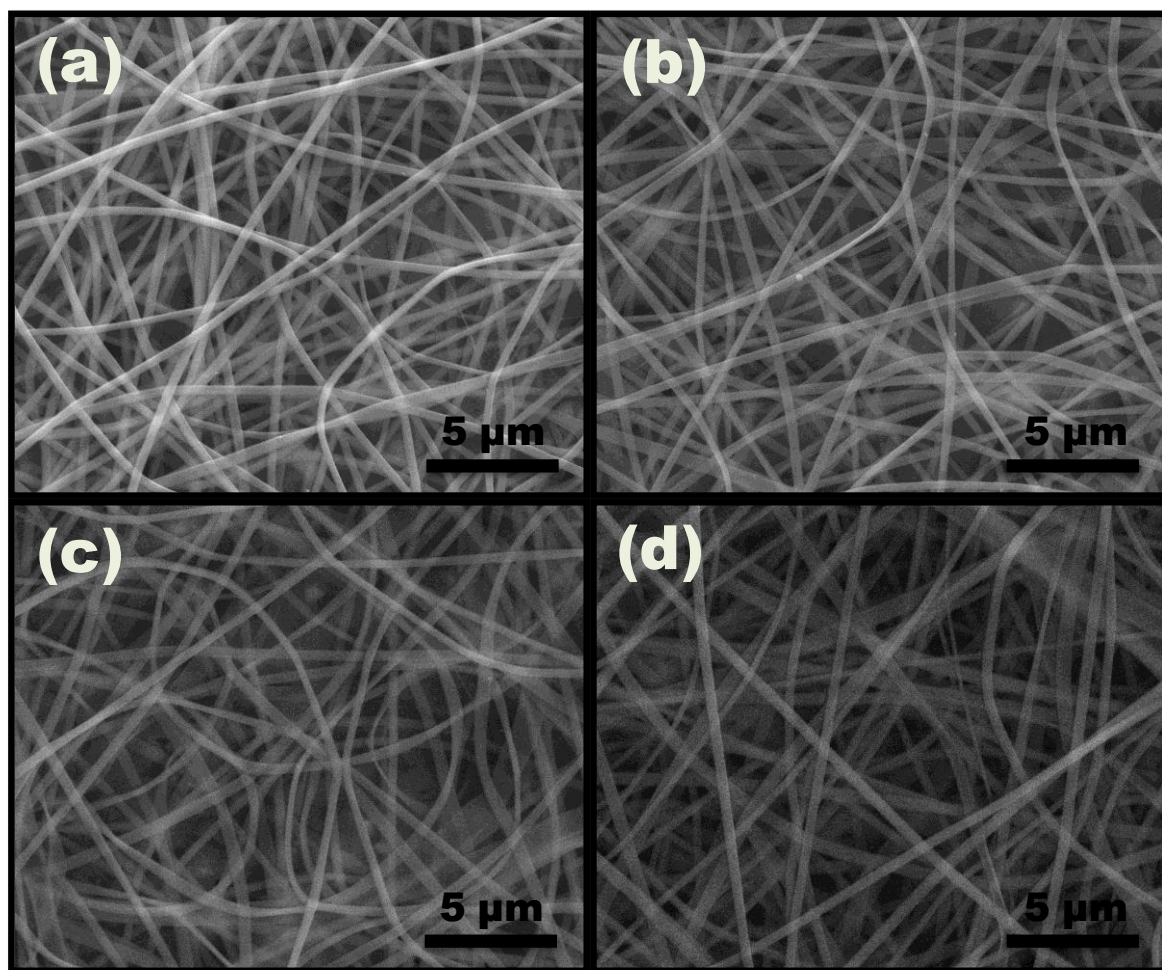
**Electronic Supplementary Material (ESI) for  
Journal of Materials Chemistry A**

**Flexible and highly stable electrospun nanofibrous membrane  
incorporating gold nanocluster as a efficient probe for visual  
colorimetric detection of Hg(II)**

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**Fig. S1: CLSM image of the AuNC solution ( $\lambda_{\text{ext}} = 488 \text{ nm}$ )**



**Fig. S2: SEM image of the gold nanocluster incorporated PVA nanofibers a-1 wt% , b-2 wt%, c- 3 wt% and d-5 wt% of AuNC solution.**

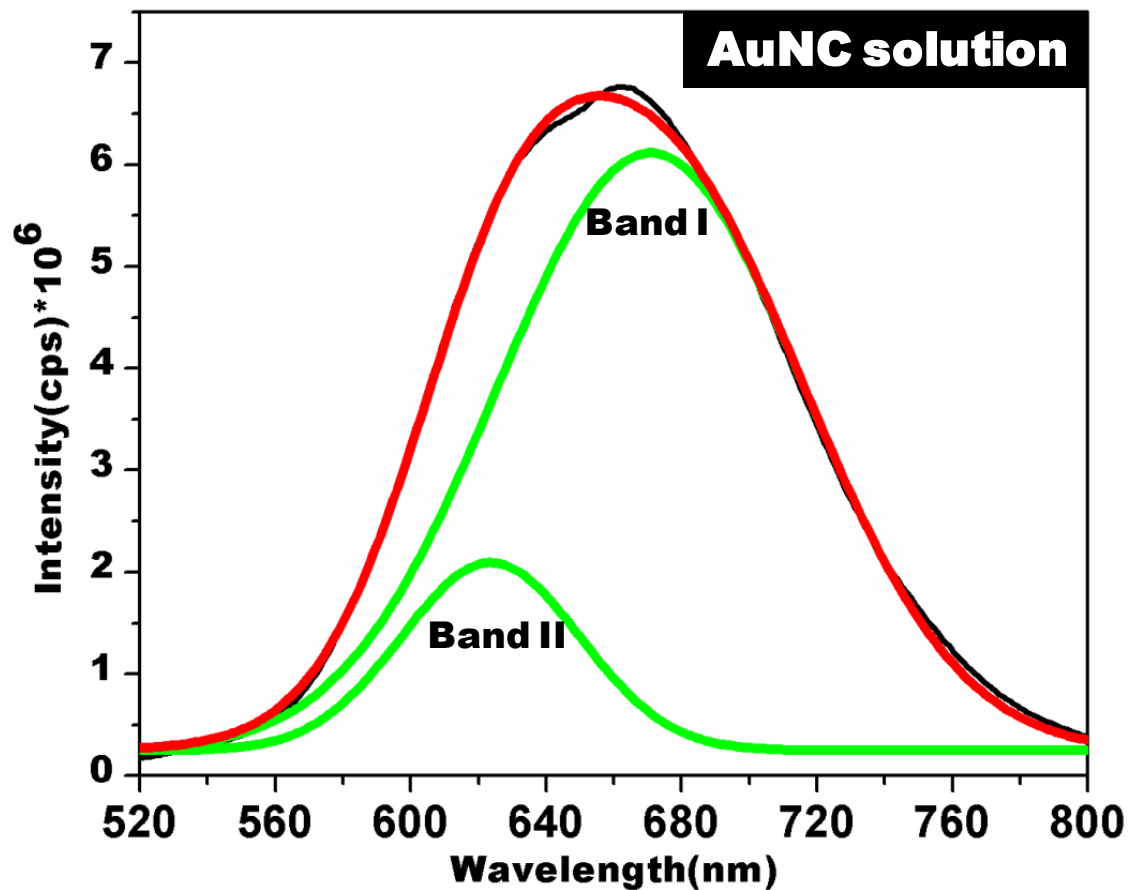
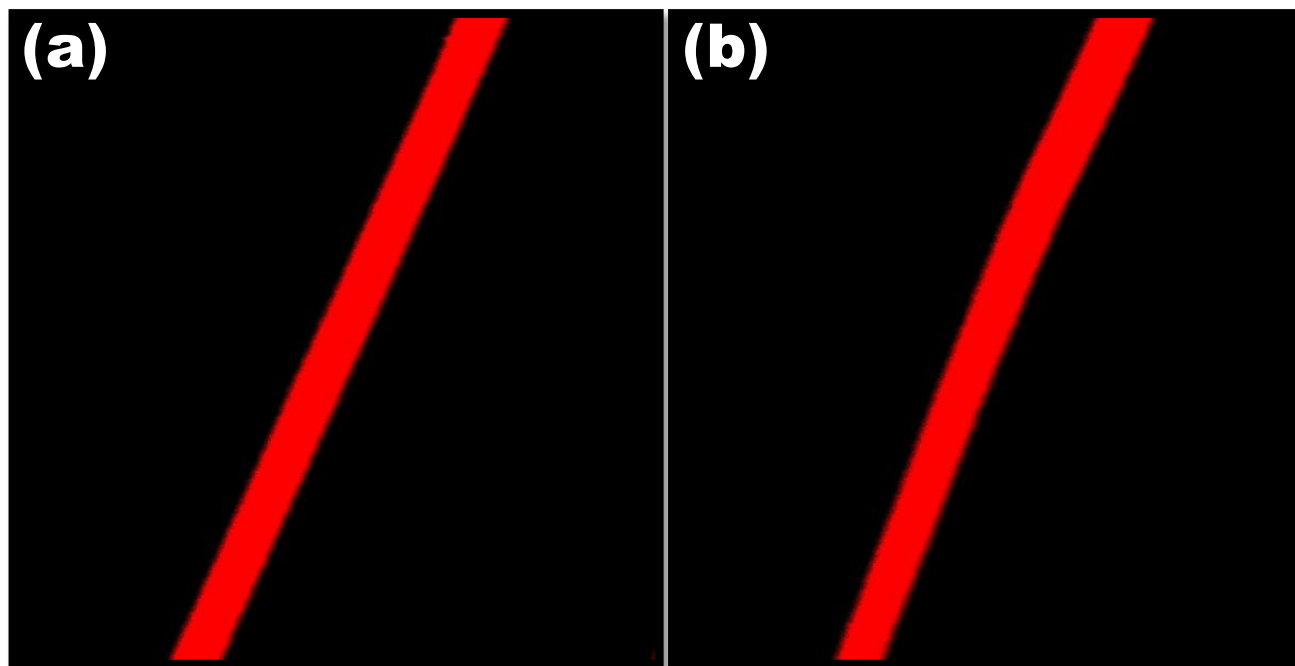
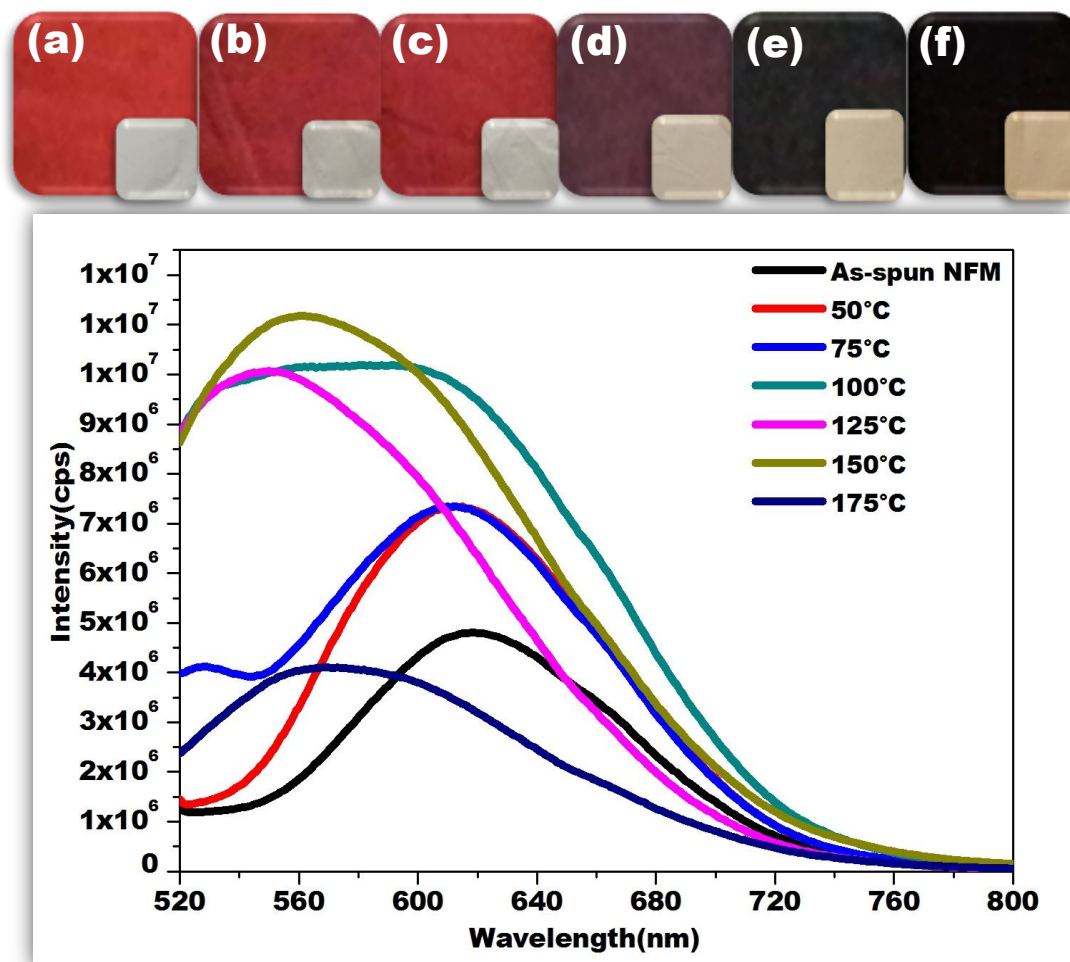


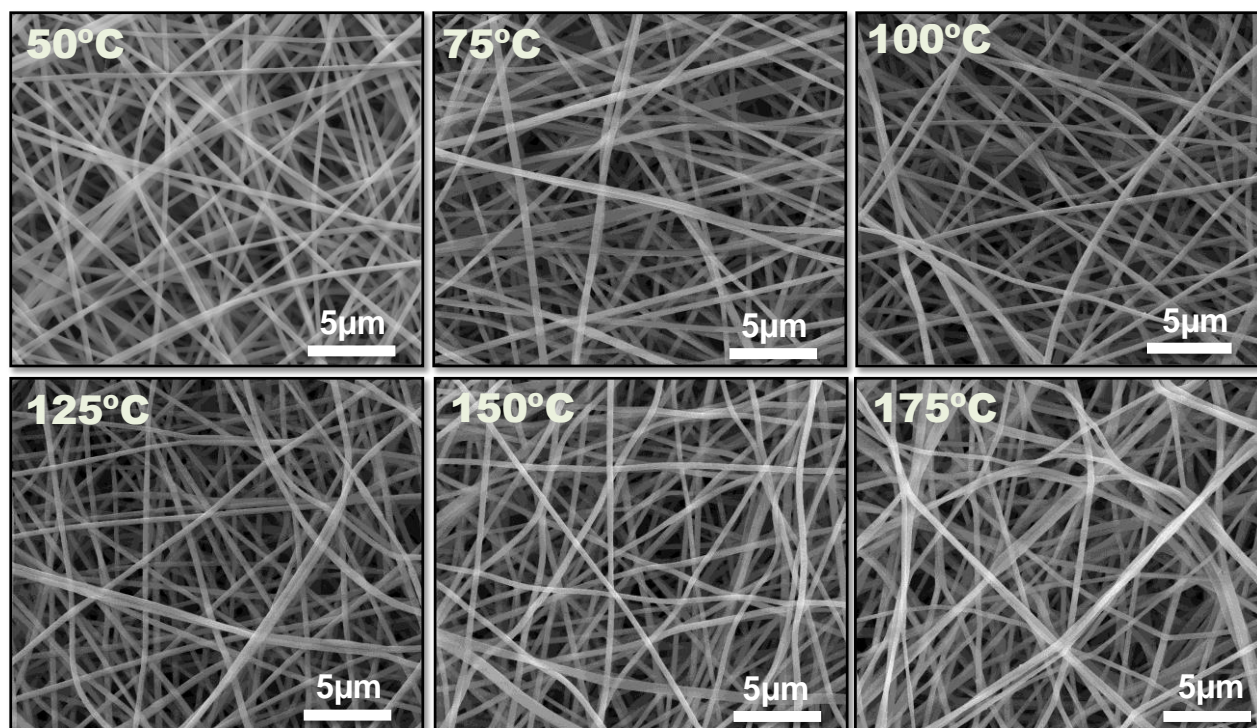
Fig. S3: Deconvoluted emission spectra of gold nanocluster solution ( $\lambda_{\text{ext}}$  -500 nm)



**Fig. S4: CLSM image of AuNC\*NF. Images were collected from the same slide after three (a) and six months (b). Note that the slide was exposed at typical room atmosphere.**



**Figure S5:** Fluorescence spectra of AuNC\*NFM treated with different temperature and their photographs taken under UV light ( $\lambda_{\text{ext}}=366$  nm). Inset shows the photograph taken under white light.



**Fig. S6: SEM image of the gold nanocluster incorporated PVA nanofibers treated with different temperature (scale bar 5  $\mu\text{m}$ )**



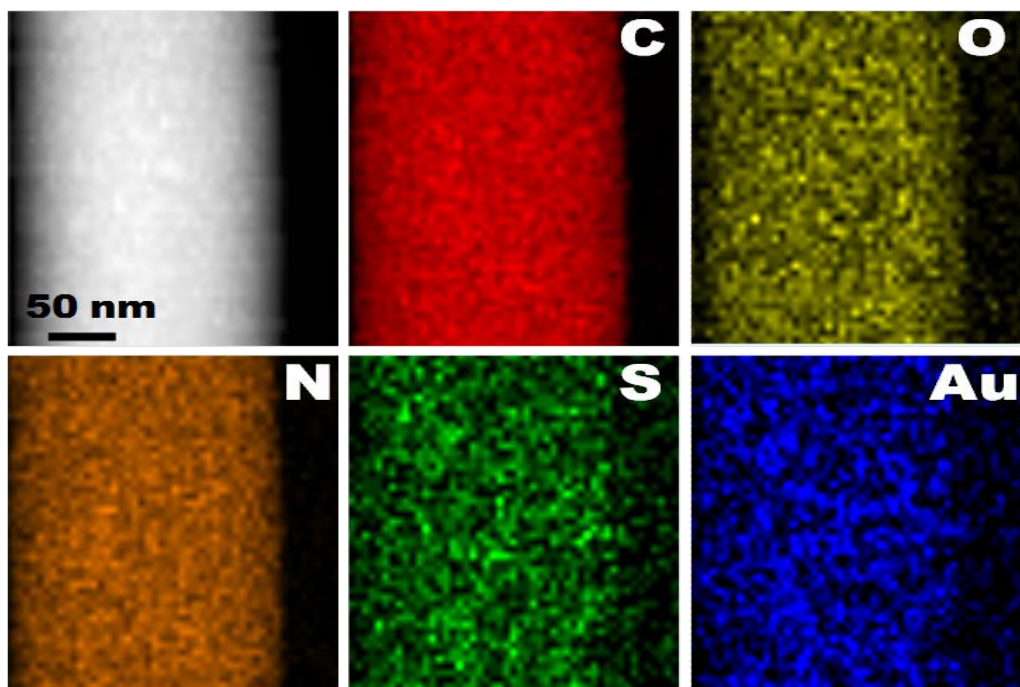
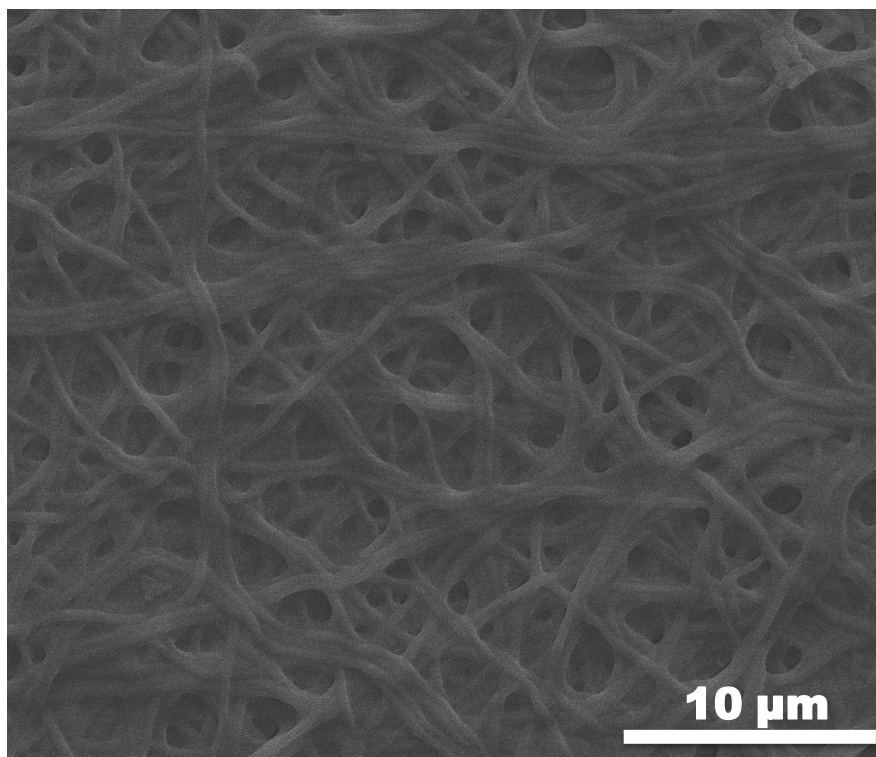
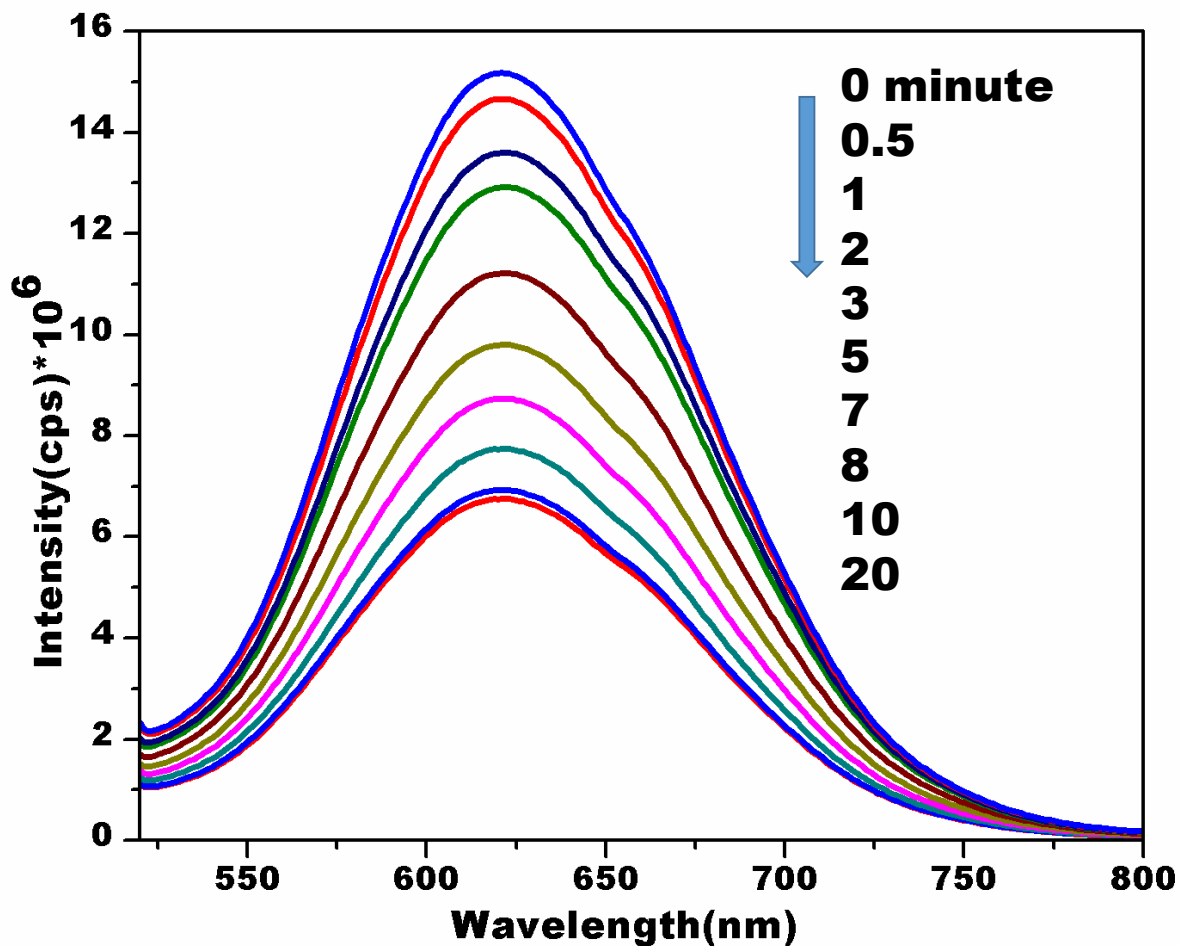


Fig. S7: HAADF-STEM image and (High-angle annular dark-field scanning transmission-electron microscopy) mapping of the elements C, O, N, S and Au presents in the cross linked AuNC\*NFM.

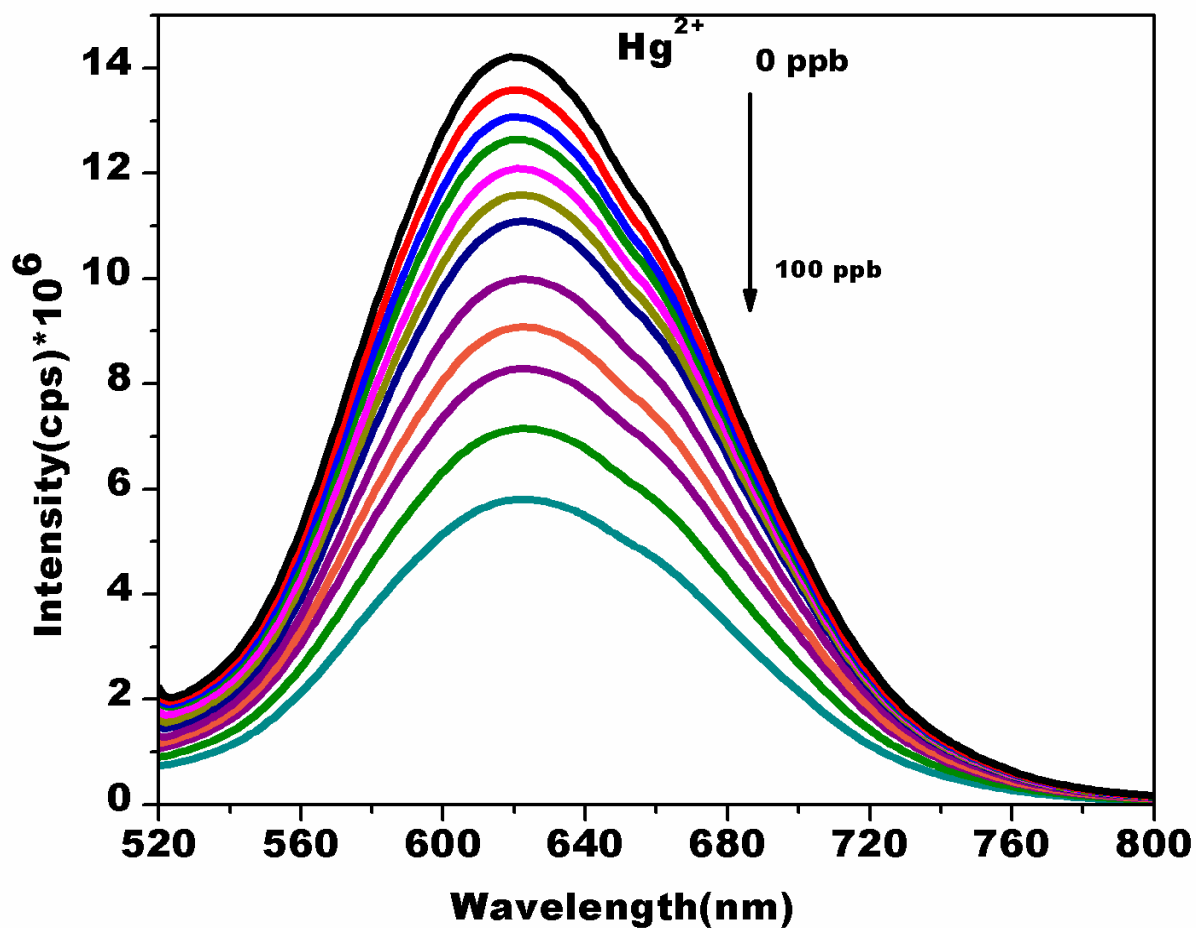




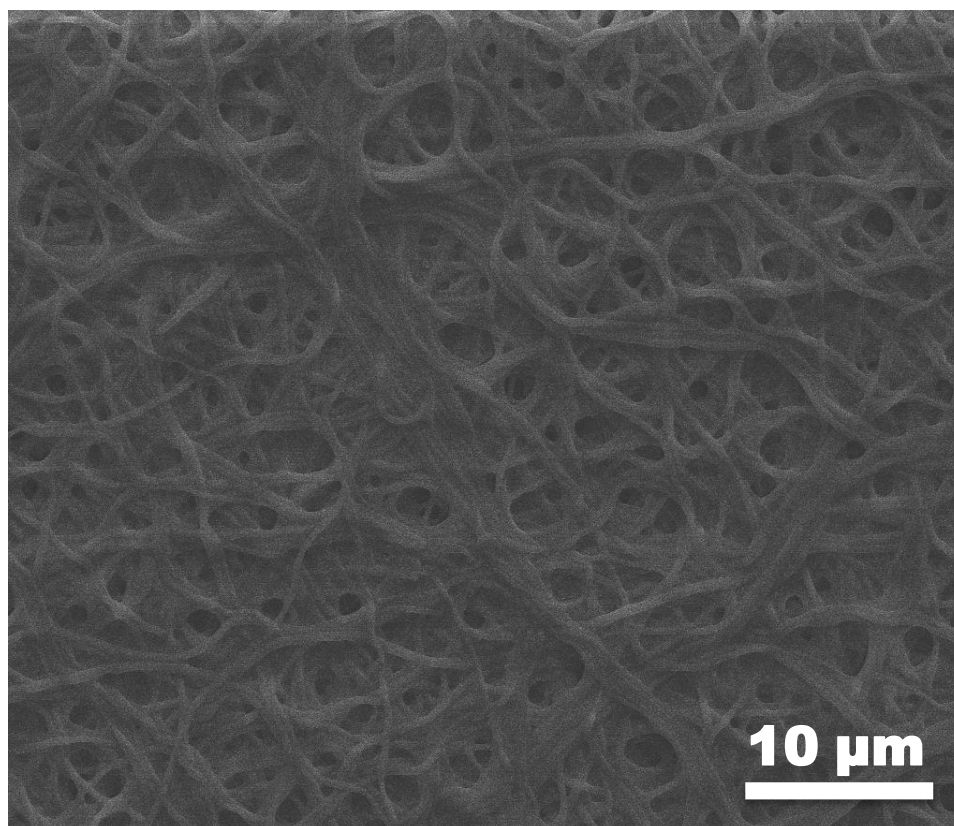
**Fig. S8: SEM image of the crosslinked AuNC\*NFM after soaked in water for hours**



**Figure S9: Fluorescence spectra of AuNC\*NFM upon addition 50 ppb Hg<sup>2+</sup> with respect to different reaction time period.**



**Figure S10:** Fluorescence spectra of AuNC\*NFM upon addition of various concentration of  $\text{Hg}^{2+}$



**Fig. S11: SEM image of the AuNC\*NFM after treated with 1 ppm Hg<sup>2+</sup>**